

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, are rejected under 35 U.S.C. 102(b) as being anticipated by WO 9940309 (Clucas et al.).

Clucas et al discloses a Stirling engine E comprising a burner 10, an external housing 11, a shroud 21, heat exchanger elements 29, 30 are formed as inverted shaped dishes or shells about the combustion chamber C.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. § 103(a) as being unpatentable over WO 9940309 (Clucas et al) in view of U.S.4121423 (Querry et al). Clucas et al discloses all the claimed subject matter as set forth above in the rejection of claim 1, but does not disclose the coolant passing through the cool end of the Stirling engine before passing to the burner. Querry et al is relied upon to disclose a Stirling engine comprising coolant chamber with liquid coolant 39 in the cooler section and the heating section area (note figures 4-5). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide coolant channel in both cooling

section and burner section in Clucas et al as taught by Querry et al for the purpose of cooling both sections.

Claim 4 is rejected under 35 U.S.C. § 103(a) as being unpatentable over WO 9940309 (Clucas et al) in view of DE 19936591 (Wu et al). Clucas et al discloses all the claimed subject matter as set forth above in the rejection of claim 1, but does not disclose a supplemental burner. Wu et al is relied upon to disclose a Stirling engine comprising supplemental burner 13. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide another burner in Clucas et al as taught by Wu et al for the purpose of improving the heating input.

Claims 5-6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over WO 9940309 (Clucas et al) in view of WO03098025. Clucas et al discloses all the claimed subject matter as set forth above in the rejection of claim 1, but does not disclose the flexible seal. WO03098025 discloses it's well known to use liquid coolant circuit 25 to cool both the burner and the seal (note abstract). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide coolant channel in both sealing section and burner section in Clucas et al as taught by WO03098025 for the purpose of cooling both sections.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Schroder et al discloses a cooling circuit for supplying cooling liquid to the cooler.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Examiner Nguyen whose telephone number is (571) 272-4861. The examiner can normally be reached on Tuesday--Friday from 12:30 AM to 10:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on 571-272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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